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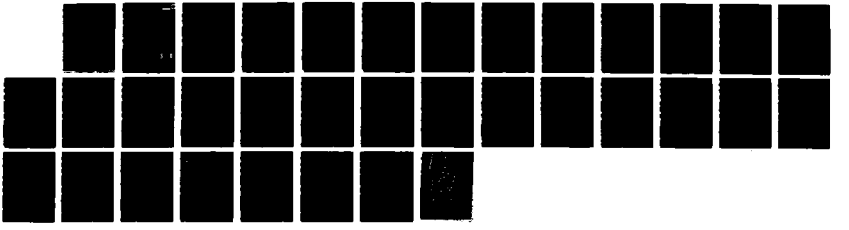

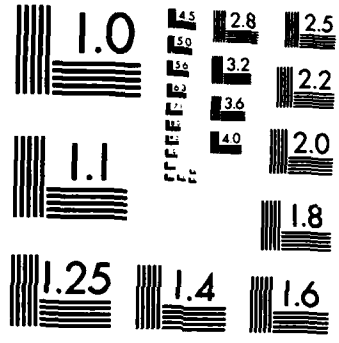

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AN ASSESSMENT OF ORAL AND MAXILLOFACIAL VIETNAM WAR CASUALTIES 10 - 15 YEARS POST-INJURY

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TECHNICAL REVIEW AND APPROVAL

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The experiments reported herein were conducted according to the principles set forth in the current edition of the "Guide for the Care and Use of Laboratory Animals," Institute of Laboratory Animal Resources, National Research Council.

This technical report has been reviewed by the NMRI scientific and public affairs staff and is approved for publication. It is releasable to the National Technical Information Service where it will be available to the general public, including foreign nations.

Commanding Officer
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An assessment of oral and maxillofacial Vietnam war casualties 10-15 years post-injury

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Eighty-six male veterans of Vietnam combat who experienced oral and maxillofacial injuries volunteered to participate in an assessment of their psycho-social adjustment 10-15 years post-injury. Subjects reported to a nearby federal medical center for a psychiatric interview, administration of the MMPI and Personal Orientation Inventory (POI), and dental/neurological examination. Approximately one-half of all subjects reported significant (T score > 70) or borderline significant (T score = 70) levels of clinical symptomatology on the MMPI. Group scores on the POI Time Ratio and Support Ratio scales were in the non-self-actualized range. Interview data indicated that 1 of 4 casualties were unhappy with their appearance, and one-third of these men have sought psychological counseling after discharge from military service.

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INTRODUCTION

Maxillofacial casualties reportedly represent between 10 and 15% of all war injuries (1). These casualties incur wounds to the face and contiguous oral structures, i.e. teeth, tongue, jaw, neck, nose, and eyes. In the Vietnam conflict (1961-1973) 303,649 U. S. servicemen sustained war related injuries (2). From these figures it can be estimated that between 30,000 and 45,000 U. S. servicemen experienced maxillofacial injuries during the Vietnam conflict (3).

The oral and maxillofacial combat casualty often presents a complicated set of problems for medical personnel. Large avulsed areas are often difficult to stabilize and there is a greater opportunity for infection and contamination from the oral cavity. The fixation of bony fragments and the stabilization/immobilization of jaws may be difficult. Wounds to the maxillofacial area usually require coordinated interdisciplinary medical care for a successful result. Because of the complex nature of their injuries, maxillofacial casualties often face multiple surgical procedures and lengthy periods of hospitalization. One group of 200 Vietnam combat maxillofacial casualties required an average hospital stay of 269 days when returned to the Continental United States after initial treatment overseas (3).

No formal counseling of any type was systematically offered to the maxillofacial casualty of the Vietnam conflict before separation from the military service. There were, however, informal efforts by individual oral surgeons and physicians to assist the casualty in his transition from the hospital environment to the public setting. During the past decade occasional contacts between Vietnam maxillofacial

casualties and their military oral surgeons have resulted in an increased awareness by the oral surgeons of difficulties encountered by the maxillofacial casualty in adjusting to life with this particular type of injury. This awareness fostered concern by the surgeons that an undetermined number of these combat casualties were in need of further assistance, assistance both of a dental and psychological nature.

Findings from a recent comparative study of demographic data from oral-maxillofacial casualties, limb amputees and non-injured Vietnam combat veterans indicated that the oral-maxillofacial casualty group was less fully employed, earned less money, held more blue-collar jobs, and was less likely to have a college degree than its non-injured counterparts (4). The primary purpose of this study, therefore, was to assess the psychological and social adjustment of the maxillofacial casualty 10-15 years after injury and subsequent reconstructive surgery. We were interested in determining whether, and to what extent, the maxillofacial injury received had affected the careers, life style, and personality of these veterans.

METHOD

Subjects. The subjects were 86 male combat veterans of Vietnam who had received wounds to the maxillofacial area and were participating in a long-term study of oral and maxillofacial casualties conducted by the U.S. Navy. Most of the casualties were initially identified for inclusion in the study by oral surgeons in DaNang, Vietnam between 1966 and 1972. During this period there was little formal opportunity for oral surgeons working at early treatment facilities to receive feedback on the procedures they used to treat these severe injuries. The majority

of the subjects in the long-term study incurred loss of mandible and/or major avulsive tissue damage. The subjects' records and case documentation were subsequently forwarded to investigators at the Naval Medical Research Institute, Bethesda, Maryland, who continued to follow the treatment of these men through the military and federal health care system. In addition, some maxillofacial casualties were identified upon arrival in the Continental United States and their case documentation were also forwarded to these investigators. Initially 204 cases were included in the study; however, by 1979 valid mailing addresses were only available for 137 subjects. Of this group 115 completed and returned a biographical survey in 1980 and tentatively agreed to be seen for a psychological and dental evaluation. Complete evaluation materials were obtained for 86 subjects during 1980-81-82. Relevant characteristics of the subjects are presented in Table 1.

Materials. The full Minnesota Multiphasic Personality Inventory (MMPI), Group Form booklet (5), and Personal Orientation Inventory (POI) (6) were completed by each subject. MMPI answer sheets were scored by National Computer Systems (NCS), Minneapolis, Minnesota which provided a profile and interpretation; POI answer sheets were scored by hand. In addition, a locally constructed 32 question interview outline was used as a guide for the interviewer in conducting the structured interview. This outline contained questions concerning the subject's recent life history, personal and social adjustment, the circumstances surrounding his injury and medical treatment, and his feelings about his combat experience. Each interview was taped on Scotch AVC Audio Cassettes. A Polaroid SX-70 LE Land Camera was used to photograph the area of the

maxillofacial injury. A four page observational checklist concerning the subject's behavior, mood, affect, sensorium, thought and perceptual processes was completed by the interviewer after the interview.

Procedure. Subjects were contacted by mail and telephone and asked if they would be willing to participate in a comprehensive evaluation at a military or Veterans Administration medical facility close to their residence. If a subject responded affirmatively, arrangements were made with the examining facility's psychology and dental services to conduct the evaluation. In 73% of the cases, one or more of the authors traveled to the examining facility to conduct parts of the evaluation. When the subject arrived at the examining facility, he and the investigator(s) discussed the specific purpose of his participation and the planned events for the day. The length of the evaluation ranged from three to six hours, and consisted of administration of the MMPI, the POI, a structured interview with a psychologist or psychiatrist, photodocumentation of the injury site, and a neurological/dental examination with radiographs. The MMPI and POI were usually administered in a supervised group setting. The structural interview lasted between 45-90 minutes and was audio taped with the permission of the subject. Each interviewer was provided with a list of questions to be asked of the subject regarding injury situation, medical treatment, personal and social adjustment, and life status after incurring the injury. In addition, the interviewers were strongly encouraged to ask followup questions and pursue topics of mutual concern with the subject. The interviewer's notes, tape recording of the interview, and a completed mental status checklist were forwarded for review. Each subject was

examined by an oral surgeon who conducted a neurological and dental evaluation of the maxillofacial area; the oral surgeon recorded the results of the examination on a standardized evaluation form supplied by the study's sponsor. Photographs and radiographs of the subject's head region were also taken. When appropriate, evaluators were encouraged to initiate referrals for the subjects for further psychological counseling and/or dental reconstruction.

Upon completion of the evaluation, all materials were forwarded to the authors at the Naval Medical Research Institute for analyses. The MMPI answer sheets were forwarded to NCS for scoring and profile analysis. For those interviews where one of the authors was not present, the audio tape was reviewed and the contents transcribed onto an interview sheet and checked against the notes of the interviewer. The dental examination results were compared with previously collected data for the subjects.

RESULTS

MMPI Test Results. A total of 85 MMPI profile sheets were available for analysis. These sheets were examined using each subject's T-score on the validity (L,F,K) and clinical (Hs, D, Hy, Pd, Pa, Pt, Sc, Ma) scales. The Masculinity-Femininity (Mf) scale and the Social Introversion (Si) scale are not considered to be clinical scales and were not addressed in this analysis.

Four subjects had MMPI profiles that were judged to be invalid. These men had T-scores above 90 on the F scale ($\bar{X}$ = 97), and all clinical scales had mean T-scores above 70; these MMPI profiles were eliminated from further group consideration. This reduced the sample to 81

valid MMPI profiles, whose mean profile is depicted in Figure 1. This profile reveals no statistically significant elevation (T-score above 70) on any validity or clinical scales. The valid profiles were further divided into 4 groups on the basis of the subject's clinical scale T-scores. Group I (n = 39) consisted of subjects with no significant elevation (above T-score of 69) on any clinical scale. Group II (n = 7) were subjects with one or more clinical scales at a T-score of 70. Group III (n = 12) consisted of subjects with a significant T-score elevation on one clinical scale (T-score above 70, less than 80). Finally, Group IV (n = 23) subjects displayed at least two clinical scales with T-scores of 70, or one or more clinical scales with a T-score above 80.

Figure 2a depicts the mean T-scores on all scales for subjects in Group I. There is no significant (T-score above 70) reporting of clinical symptoms or symptom patterns. This group of 39 subjects represents 48% of the valid MMPI sample and 46% of the total sample of Vietnam veterans in this study. Group II's (one or more clinical scale T-scores at 70) profile is presented in Figure 2b. Again, no clinically significant elevations are noted in this group profile. Four subjects had a Hy scale T-score of 70 and three subjects scored 70 on the D scale.

For the 12 subjects with at least one clinical scale T-score above 70 but less than 80 (Group III), the group profile does not contain any clinical scale T-score above 70 (Figure 2c). However, the tendency is toward subclinical elevations on the Depression (D) scale ($\bar{X}$ T-score = 64.9) and the Hypomania (Ma) scale ($\bar{X}$ T-score = 65.1). Table 2 presents

frequency of elevations above 70 by clinical scale for this group. Manic, hypochondriacal and depressive symptoms are the most frequently reported, although the number of subjects and frequency of each clinical scale elevation is relatively low.

Figure 2d depicts the mean T-score on all scales for Group IV. This mean profile reveals significant elevations on the Depression (D) and Schizophrenia (Sc) scales. Furthermore, there are borderline elevations on the Hypochondriasis, Psychopathic Deviate and Psychasthenia clinical scales. All clinical scales had mean T-scores of 64.2 or greater. At the time of their testing Group IV subjects were reporting a clinically meaningful level of symptomatology. Table 2 presents the frequency of significant T-score elevations by scale for this group. Depression, Hysteria, Psychopathic Deviate, and Schizophrenia are the scales with frequent clinical elevations, with Hypochondriasis, Depression, Psychasthenia, and Schizophrenia scales having frequent, very significant (T > 80) elevations.

POI Test Results. The mean scores and standard deviations on the POI scales for the entire maxillofacial group can be seen in Figure 3. Overall, the profile is slightly depressed, with 10 of the 12 scales falling below the standard score of 50 derived from adult norms. Complimentary scale scores (i.e. SAV with Ex, Fr and S, etc) are highest in the area of feeling (Fr with S), and lowest in the area of awareness (Nc with Sy).

Two important aspects of the POI are the Support Ratio score and the Time Ratio score. The Support Ratio score is expressed as the ratio of other-person orientation to inner-person orientation (O:I). Other-

directed persons tend to have their actions dependent upon approval from others and are controlled by fear or anxiety associated with their peer group. Inner-directed persons appear independent, and rely on a small number of internalized principles incorporated early in life to govern their actions; internal motivations are the guiding force as opposed to external influences. The Time Ratio is expressed as the ratio of Time Incompetency to Time Competency (Ti:Tc). Self-actualizing individuals tend to score high on the Time Competency scale, live fully in the present, demonstrate sound mental functioning, and relate meaningfully to the past, present, and future. Time Incompetent individuals do not discriminate well between the past and future, are discontented in the present, and may be overly conscious of the past or future in relation to the present. Given this framework, scores on both POI Ratio scales by the oral-maxillofacial casualties fall *below the norm*. The mean score on the Support Ratio scale was 1:1.8, a ratio falling at the upper end of the non-self-actualized category as shown in Table 3. The maxillofacial group mean score on the Time Ratio scale was 1:2.3, a ratio also falling within the non-self-actualized range as determined by adult norms. These mean Ratio scores accurately reflect the group performance as evidenced by the large percentage of individuals who scored in the non-self-actualized ranges on either the Time Ratio, Support-Ratio, or both, scales (Table 3).

Previous research with beginning and advanced therapy groups has demonstrated significant relationships between POI and MMPI scales (7). These relationships were significant among POI Inner-directed (I), Self-regard (Sr), Acceptance of Aggression (A), and the MMPI Depression

scale (D), and between the POI Spontaneity (S) scale and the MMPI Psychasthenia (Pt) scale. To determine the degree of relationship between scores on these scales within the oral-maxillofacial group, Pearson product moment correlations were computed using valid MMPI and POI test answers (n = 81). Scores on the MMPI Depression scale were found to be negatively correlated with scores on the POI I scale ($r = .42$, $p < .05$) and Sr scale ($r = .47$, $p < .05$). Further, scores on the MMPI Pt scale were negatively correlated with POI S scale scores ($r = .40$, $p < .05$). There was no significant correlation between the MMPI D scale and the POI A scale.

Interview Response. Subject responses to interview questions were categorized, tabulated, and converted into percentages. Only answers to those questions concerning economic, personal and social adjustment are reported. Occasionally, questions were not asked or answers not recorded; this occurred infrequently, and percentages reported are based on the number of answers available.

When asked if their injury had an economic impact on their life, 37% of the subjects answered yes, 60% no, and 3% perhaps. Several clarifying responses to this question centered on the time lost out of their life for pursuing career goals; two responses indicated there was some benefit due to the receipt of disability compensation. Of the 27% who also indicated that their injury had impeded their progress or closed off avenues of growth, those who commented said that this was due to physical disabilities such as speech impairment, altered visual perception, and loss of manual skills. On their present job, the injuries incurred are a handicap for 22% of the sample; however, most of

these handicaps arise from injuries incurred at other anatomical sites at the time of the maxillofacial wound (e.g. loss of limb, loss of eye).

A primary focus of the structured interview was to determine how well the oral and maxillofacial casualty was presently functioning in society. In order to assess this, a number of questions were asked regarding the subject's social adjustment. When asked how other individuals react to them, 56% of the sample indicated a reaction in a positive fashion, e.g. "People like me," "I make a favorable impression," "I get along with most everyone." Neutral responses were given by 31% of the sample (e.g. "O.K.," "pretty fair," "accept me") and 13% indicated that most people react to them negatively (i.e. "people think I am an ugly dude," "fear or disgust," "not a warm person").

Almost two-thirds of the subjects consider themselves "loners" as opposed to "joiners" (61% vs 32%), with only 35% indicating that they are active in clubs or organizations. The organizations most frequently represented in this group were those associated with military service: Disabled American Veterans (n = 12), Veterans of Foreign Wars (n = 7), and American Legion (n = 5).

One of every three subjects indicated that he has social fears. These fears were centered on meeting people on the first occasion, exposure to crowds and large numbers of people, and generally feeling shy and self-conscious in public. Further, one-third of those interviewed indicated there were social and family situations that created anxiety for them. These situations focused around social functions involving strangers, in-law conflict (5 cases involving mother-in-law), parent-veteran interactions, and veteran-child problems. Difficulty in

social situations was also reported by some veterans who have hearing impairments associated with their oral and maxillofacial injuries. Most of the men are comfortable with both men and women (53%), or men (30%). Sixteen percent of those evaluated reported that they use drugs socially, with marijuana (n = 11), amphetamines (n = 4), and cocaine (n = 3) having the highest representations. Twenty-three percent of these casualties report no alcohol use. Of those who do drink, 66% consumed beer primarily, 25% hard liquor, and 9% wine. At the time of the interview 19% of the active drinkers reported problems associated with their use of alcohol (e.g. blackouts, family problems, DWI).

Subjects were asked how they feel about their appearance. Favorable responses were made by 22% (e.g. "pretty good-looking guy," "good," "my appearance is fine"), neutral responses by 50% (e.g. "it's satisfactory," "*no problem*," "doesn't bother me"), and 28% responded in a negative manner (e.g. "don't like it," "I feel badly about my appearance," "not happy with it"). In effect, one of four maxillofacial casualties are still unhappy about their cosmetic result 10-15 years post-injury.

Only two subjects recalled seeing a psychologist or psychiatrist before discharge (outside of a medical board setting), while two other subjects remembered being advised to seek psychological help from the physician/nursing staff (the patients refused). Since discharge, 36% of this sample reported receiving professional psychiatric or psychological care; several also reported their involvement in marital and family counseling. More than 80% of the subjects have received substantial medical care from military or VA hospitals after their discharge from the military service. Most report that they are satisfied with the

quality of medical care they received since discharge. However, in 11 cases, the subjects indicated substantial deficiencies in the care they received; all of these complaints were about post-discharge hospital treatment.

Reflecting upon the ways in which the war impacted their life, many responses (n= 17) by the subjects mirrored bitterness, suspicion and distrust of the American political leaders who sent them to fight. An additional 10 subjects answered that the war matured them, and six subjects emphasized the increased value that they now place on life as a result of their war experience. Positive feelings about their part in the war were reported by 54% of those who responded; 40% reported negative feelings and 6% answered that they had no positive or negative feelings. Frequent positive responses centered on feelings of performing their job well (n = 12), enjoying their job (n = 6), and being proud to have served their country (n = 5). Negative feelings most frequently concerned a global impression that the war was a mistake and was not worth the cost to the United States (n = 9). Additional specific statements of a negative nature were concerned with the taking and loss of life (n = 7), the perceived political corruption (n = 6), and the differential reception afforded Vietnam veterans, draft dodgers, and POW's upon their return to the the United States. Of the 25 men who responded to the question of other ways the war affected their lives, the most frequent answers included a wide variety of reported personality and attitudinal changes (n = 11, and increased appreciation for the value of life (n = 5).

Dental/Neurological Examination. Examinations were performed on each of the subjects who reported for the psychological evaluation and interview, with satisfactory data received in 73 cases. It was determined that 88% of these subjects had neural deficits in cranial nerves (V, VII, or IX) which were sensory, motor, or both sensory and motor in nature. Fifty percent of these subjects had only sensory loss, 4% only motor loss, and 34% both sensory and motor deficits.

Speech difficulty secondary to the injury was found in 10% of the subjects and 12% reported difficulty in swallowing. These difficulties were related to loss of tongue structure and intraoral and perioral scarring. In this regard, almost 20% of the subjects examined had reduced oral function consisting of restricted opening of the mouth and limitation of mandibular movements primarily resulting from scar contracture.

Although most of the men thought they had received maximum benefit of reconstruction and rehabilitation and that further treatment was either not required or not available, this follow-up exam revealed that 60% required dental prosthetic appliances (which either had never been constructed or required re-make). Twenty percent of the subjects needed additional surgical procedures to improve function and 5% still had discontinuity of the mandible which severely affected appearance and function.

DISCUSSION

Interpretation of the data from the MMPI is restricted by the psychometric characteristics of the inventory. The MMPI is sensitive to fluctuations in mood, i.e. the mental status of the subject the day of testing.

This group of subjects is unique in many respects, e.g. combat experience, maxillofacial injuries which may be as threatening or more threatening to self-image than any other type of injury, and the perception of failure of their country to recognize their sacrifices. Indeed, many of their fellow citizens scorned and rejected them for their participation in an undeclared and very unpopular war. Multiple variables probably interact in accounting for the mental status of these subjects. The MMPI was selected to provide a basis for assessing a current level of psychological functioning in these subjects. The data is indicative of the subject's willingness to endorse items which suggest significant physical and emotional symptomatology.

Further caution must be exercised in interpretation. The endorsement of physical symptomatology must be viewed in light of the severe physical insult to the body experienced by each subject. Furthermore, the MMPI asks the subject if they have had unusual and/or bizarre experiences. All of these subjects had unusual, even bizarre, experiences during the war.

This group of subjects (n = 81) had a mean profile with no clinical scale significantly elevated, i.e. all scales were essentially within normal limits (less than two standard deviations about the T score mean of 50). Any hypothesis that this group of veterans would endorse clinically significant levels of symptomatology, relative to comparable non-veteran groups, is not supported in terms of their group profile. Thirty-nine of the eighty-one subjects with valid MMPI profiles had no clinical scale above a T score of 70. Therefore, approximately 48% of this group of veterans appears to be essentially free of any significant degree of psychopathology, as measured by the MMPI.

Clinically significant symptomatology was reported by 14.8% of subjects with valid MMPI profiles (n = 12). These complaints predominately involved tension of the type seen in hypomanic patients, excessive somatic complaints and depression. Twenty-three subjects reported very significant patterns of psychopathology. They had at least two clinical scales above a T score of 70 or one clinical scale above 80. Depressive symptoms were most often reported; characteriological problems, hypochondriacal symptoms and schizophrenic symptoms also were frequently reported. A combined total of 35 patients had significant clinical scale elevations. This represents 43% of the total subjects with valid MMPI profiles.

Seven subjects reported a borderline level of symptomatology. These symptoms mainly involved hypomanic behavior and depression. Therefore, approximately 52% (n = 42) of *all subjects with valid MMPI* profiles reported statistically significant or borderline significant levels of clinical symptomatology.

A predominant theory of psychopathology is that character/personality disorders are chronic and are a result of emotional immaturity and personality maldevelopment originating in preadolescent years. Since all of these subjects were at least 18 prior to their Vietnam experience, it is possible that significant character pathology existed in some of the subjects prior to their combat injuries. Depressive symptomatology, somatic complaints and some possibly psychotic level symptom patterns may well reflect the difficulties expected in a group of individuals who were forced to cope with very severe body image and therefore self-image conflicts. A common denominator among the more significantly elevated

MMPI profiles was the need for intervention and the subject's endorsement of items suggestive of amenability to psychotherapeutic intervention. This is significant in view of the time elapsed since their injuries and the inconsistent availability and productivity of previous intervention programs.

As a group, oral and maxillofacial casualties are far from functioning optimally as evidenced by POI Time and Support Ratio mean scores, both of which fell into the non-self-actualizing range. More than a third of all subjects yielded scores on both Ratio scales indicative of individuals experiencing difficulty in personal effectiveness. The scores on the Time Ratio scale, which fell into the non-self-actualized range reflect persons who may harbor guilts, regrets and resentment against the past, are unable to relate the present to the past or future, or may hold unrealistic, idealized plans and goals for the future (6). On the Support Ratio scale, the maxillofacial casualties as a group appear to be unable to decide when to act independently or when to conform to the peer groups.

The significant negative correlations between the MMPI Depression scale scores and the POI Inner-directed and Self-regard scale scores suggest that the more depressed the individual, the lower his perception of his self-worth and the more reliant he is on the peer group for approval. Conversely, those subjects who endorsed relatively few of the items on the MMPI Depression scale tended to endorse POI items associated with liking oneself as a person and relying on internal motivation to guide one's decisions in life. The MMPI Psychasthenia scale contains many items that relate to fear, anxiety, doubt, and obsessive thoughts,

whereas the POI Spontaneity scale contains items relating the ability of one to express feelings in spontaneous action. The significant negative correlation between these two scales indicates that low scorers on the Psychasthenia scale (characteristic of self-confident and well-adjusted individuals) score high on the Spontaneity scale (characteristic of freely expressing persons).

It is significant that both a personality inventory designed to assess psychopathology (the MMPI) and an inventory created to assess stable psychological functioning (the POI) should provide measures which support each other regarding the functioning of the oral and maxillofacial casualty. The results of the MMPI and the POI indicate that whereas approximately one-half of the MMPI profiles reported significant levels of clinical symptomatology, an even greater number of subjects yielded scores on POI scales indicative of problems in functioning when compared to non-injured adults. These test data provide evidence to support the self-reports obtained in the interviews, and substantiate the concerns reported by military oral surgeons during the intervening years. A comparison of this maxillofacial injury group with the psychopathology profile of other groups of wounded Vietnam veterans could be a productive analysis.

Almost all of the psychological data gathered in this study consisted of self-report data from the interview, the MMPI and the POI. The validity of the information obtained through these methods is dependent upon the cooperation of the subject and his understanding of what was required of him. All of the subjects had a long association

with military health care systems and were volunteers in the longitudinal study of oral and maxillofacial casualties. Many traveled considerable distances to participate in this evaluation, and gave other concrete indications of their sincere desire to cooperate. Both of the personality inventories have validity indicators. In the case of the MMPI, five profiles were removed because of their doubtful validity. It was unclear as to whether these very high validity and clinical scale scores were due to misunderstanding the directions, a desire to portray themselves as unstable, or frank psychopathology. No evidence was found to indicate that the validity of the POI data was questionable.

The primary purpose of the structured interview was to collect information concerning the subject's life experiences and adjustment post-injury, information which was believed could best be elicited in a private interpersonal setting. Secondary goals of the interview included providing the subject with an opportunity to talk with a mental health professional about any difficulties he was experiencing, and providing a mechanism for continued assistance via referrals to appropriate institutions and personnel near the subject's home. The interviews were not intended to be, nor were they used as, a diagnostic tool. Nevertheless, a substantial number of men reported that the interview provided them with their first formal opportunity to discuss recollections, feelings and emotions regarding their injury since they incurred the maxillofacial wound.

Of the 115 casualties who agreed to participate, 86 were actually evaluated; the loss of the remaining 29 volunteers was due to difficulty in setting up mutually convenient evaluation times, job transfer to

relatively inaccessible locations (e.g. Alaska), and loss of contact within the 1980-82 timeframe. Only two individuals who contacted the authors indicated their desire not to participate; their wishes were respected. The men who were unable or unwilling to be contacted represent a significant segment of the original sample. To what extent their loss from the study is due to disenchantment with their treatment, hostility towards the service, etc. remains unanswered, and requires that caution be exercised in attempting to generalize our results to other oral and maxillofacial casualties.

Our sample was composed primarily of subjects who incurred rather severe wounds to the oral and maxillofacial area. Many of these men required bone-grafts and reconstruction of the mandible. It is probable, therefore, that the findings and conclusions drawn from the present data represent the "worst case" end of a continuum of maxillofacial injury effects, and should be interpreted with consideration to this bias.

The findings of this study include several positive aspects. Noteworthy is the interview data which indicated that approximately 75% of the subjects felt that their injuries did not impede their progress, that they experienced neutral or positive perceptions of their appearance, and that almost all subjects felt that people reacted to them in a neutral or positive manner. Few subjects reported that their injury was a handicap in their work. In addition, MMPI test results indicated that approximately one-half of the sample was free of significant psychopathology.

Results which suggest adjustment problems for this sample include: 1) the significant percentage of subjects endorsing MMPI items reflective of clinical symptomatology, 2) the overall mean scores on the POI ratio scales which indicate that the majority of the maxillofacial casualties are leading ineffective lives, 3) the interview data indicating unhappiness with cosmetic results of reconstruction and the persistence of social anxieties and fears, and 4) the dental/neurological examination which documented the need for new dental prosthetic appliances and additional surgery for a significant number of these men. One-third of the subjects have received psychological assistance after their discharge from the military, whether via a professional referral or self-initiated.

These results point to the need for early intervention by mental health professionals in the course of treatment of oral and maxillofacial casualties, with psychological support carried through late care. Management of oral and maxillofacial casualties should include periodic evaluation of both the psychological and surgical reconstructive process, with this requirement recognized and supported by all health care professionals responsible for the management of these casualties.

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FIGURE CAPTIONS

Figure 1. Mean T-score profile of the maxillofacial subjects (n = 81) on the Minnesota Multiphasic Personality Inventory.

Figure 2. Mean T-score profiles of the maxillofacial subjects in Group I (n = 39), Group II (n = 7), Group III (n = 12), and Group IV (n = 23) on the Minnesota Multiphasic Personality Inventory.

Figure 3. Mean raw score profile of the maxillofacial subjects (n = 86) on the Personal Orientation Inventory.

TABLE 1

Characteristics of oral and maxillofacial casualty subjects (n = 86)

Age at time of evaluation:	Mean	35.1 years
	SD	3.8 years
	Range	28-48 years
Branch of military service:	U. S. Marine Corps	52
	U. S. Army	32
	U. S. Navy	1
	U. S. Air Force	1
Entered military service via:	Enlistment	58
	Draft	16
	Officer Program	12
Rank at time of discharge from military service (or present rank if still on active duty [n = 51]:	E1 → E3	15
	E4 → E5	49
	E6 → E9	10
	01 → 06	12

TABLE 2

Frequency of MMPI Clinical Scale T-scores for Groups III (N = 12) and IV (n = 23)

Group	Scale	f
III (T-score >70 but >80)	Hypomania (Ma)	4
	Hypochondriasis (Hs)	3
	Depression (D)	3
	Psychopathic Deviate (Pd)	1
	Psychasthenia (Pt)	1
IV (T-score >70 but >80)	Depression (D)	9
	Hysteria (Hy)	7
	Psychopathic Deviate (Pd)	5
	Schizophrenia (Sc)	5
	Hypochondriasis (Hs)	4
	Paranoia (Pa)	4
	Psychasthenia (Pt)	4
	Hypomania (Ma)	4
(T-score >80)	Hypochondriasis (Hs)	6
	Depression (D)	5
	Psychasthenia (Pt)	5
	Schizophrenia (Sc)	5
	Psychopathic deviate (Pd)	4
	Hypomania (Ma)	4
	Hysteria (Hy)	1

TABLE 3

Scores on the Personal Orientation Inventory Time Ratio and Support Ratio Scales

Scale	Maxillofacial Group	Normative Ranges	
Time Ratio (Ti:Tc)	1:2.3	Self-actualized	1:8.0
		Normal	1:5.0
		Non-self-actualized	1:2.8
Support Ratio (0:1)	1:1.8	Self-actualized	1:3.0
		Normal	1:5.0
		Non-self-actualized	1:1.8

No. of Casualties With		n(%)
Time Ratio Scores	= 1:2.8 <	55 (63%)
Support Ratio Scores	= 1:1.8 <	37 (42%)
Time Ratio Scores	= 1:2.8 <	
and		
Support Ratio Scores	= 1:1.8 <	31 (36%)

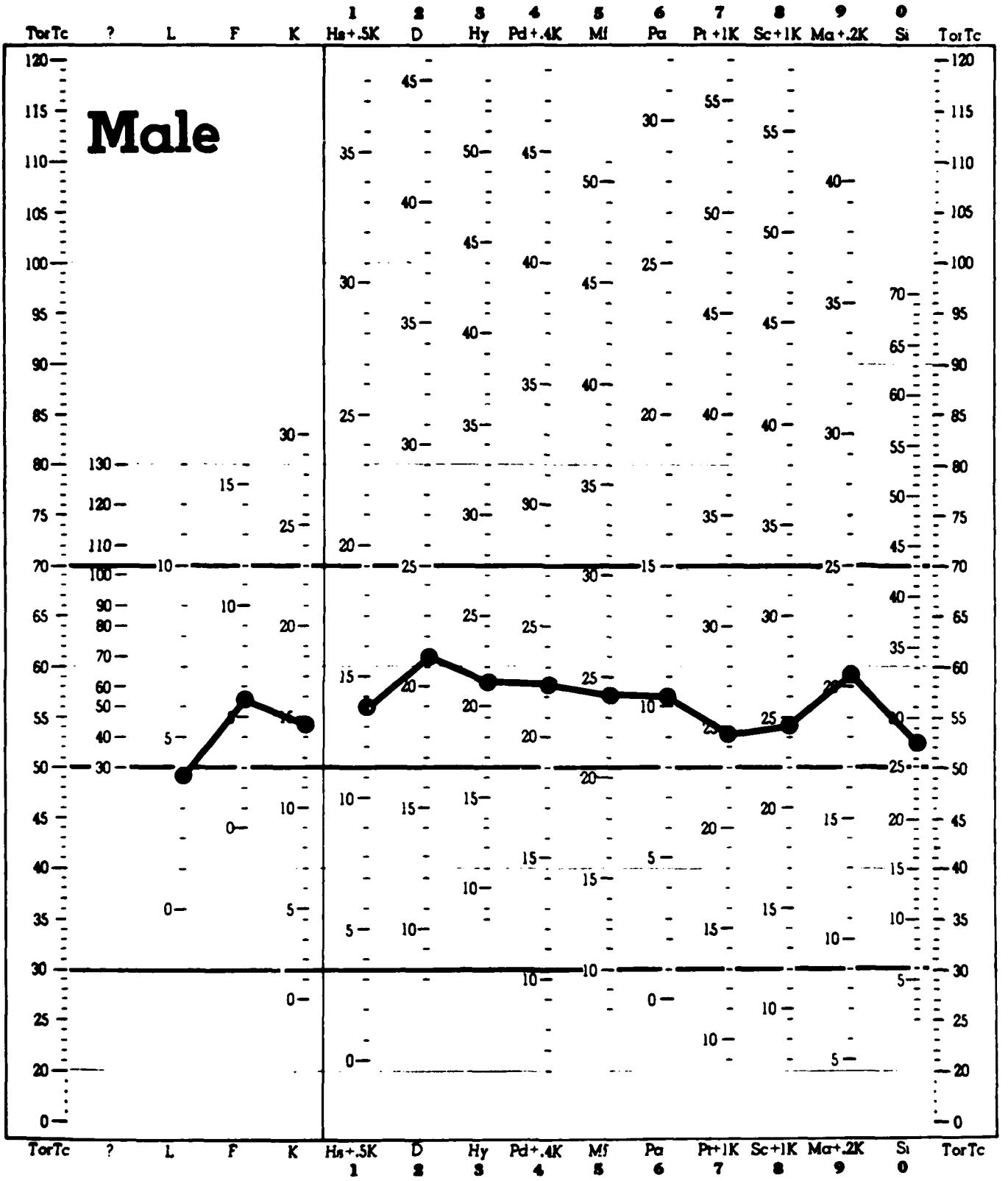
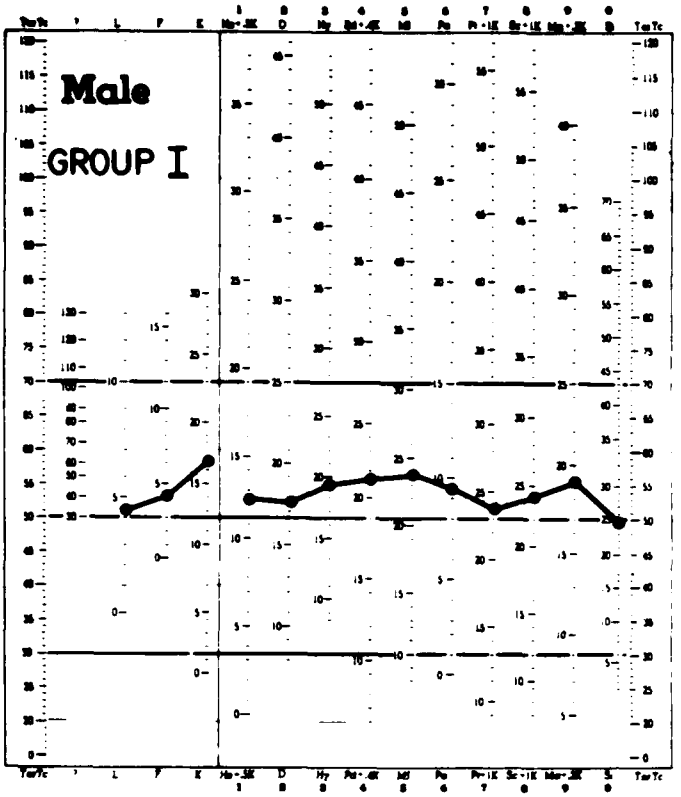
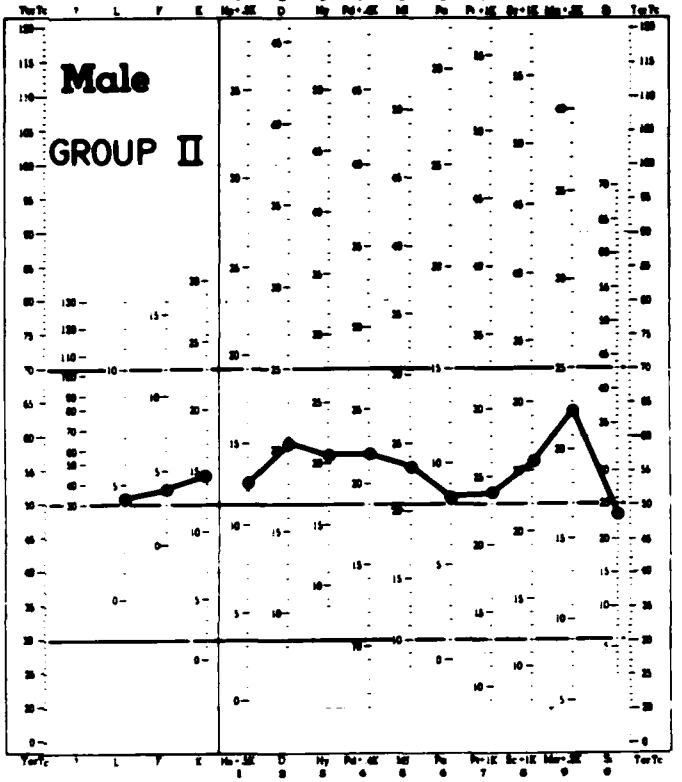
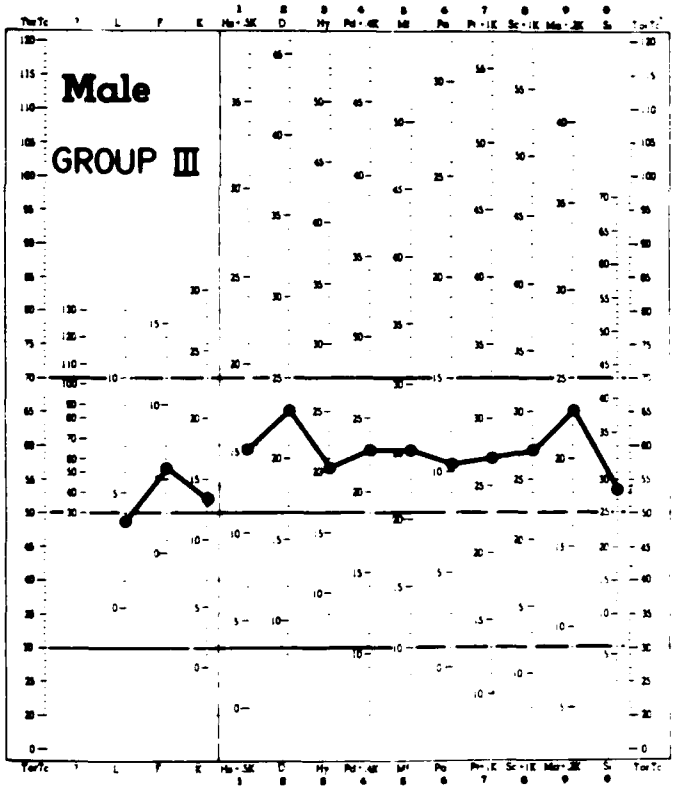

Male
TorTc
?
L
F
K
1 Hs+.5K
2 D
3 Hy
4 Pd+.4K
5 Mf
6 Pa
7 Pt+1K
8 Sc+1K
9 Ma+.2K
0 Si
TorTc

FIGURE 1







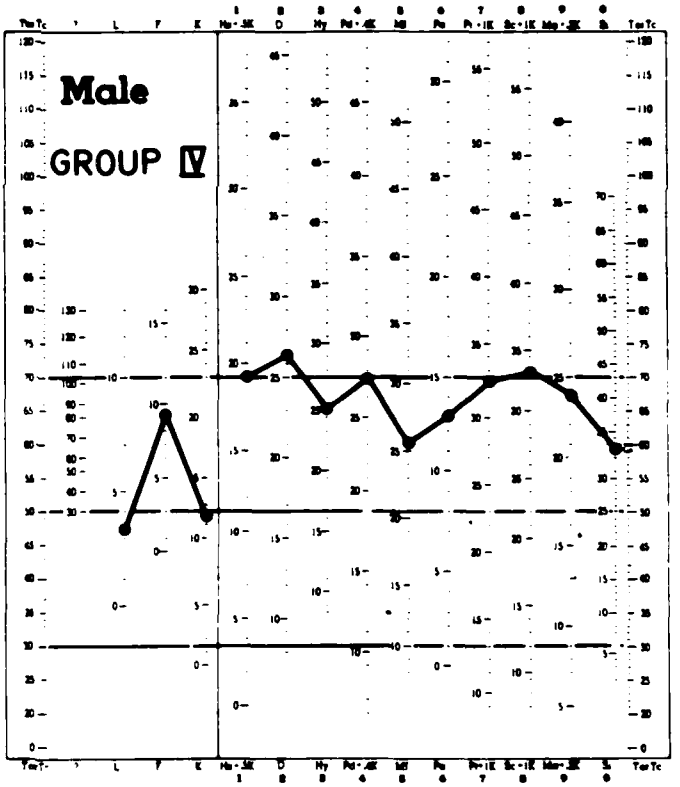


FIGURE 2

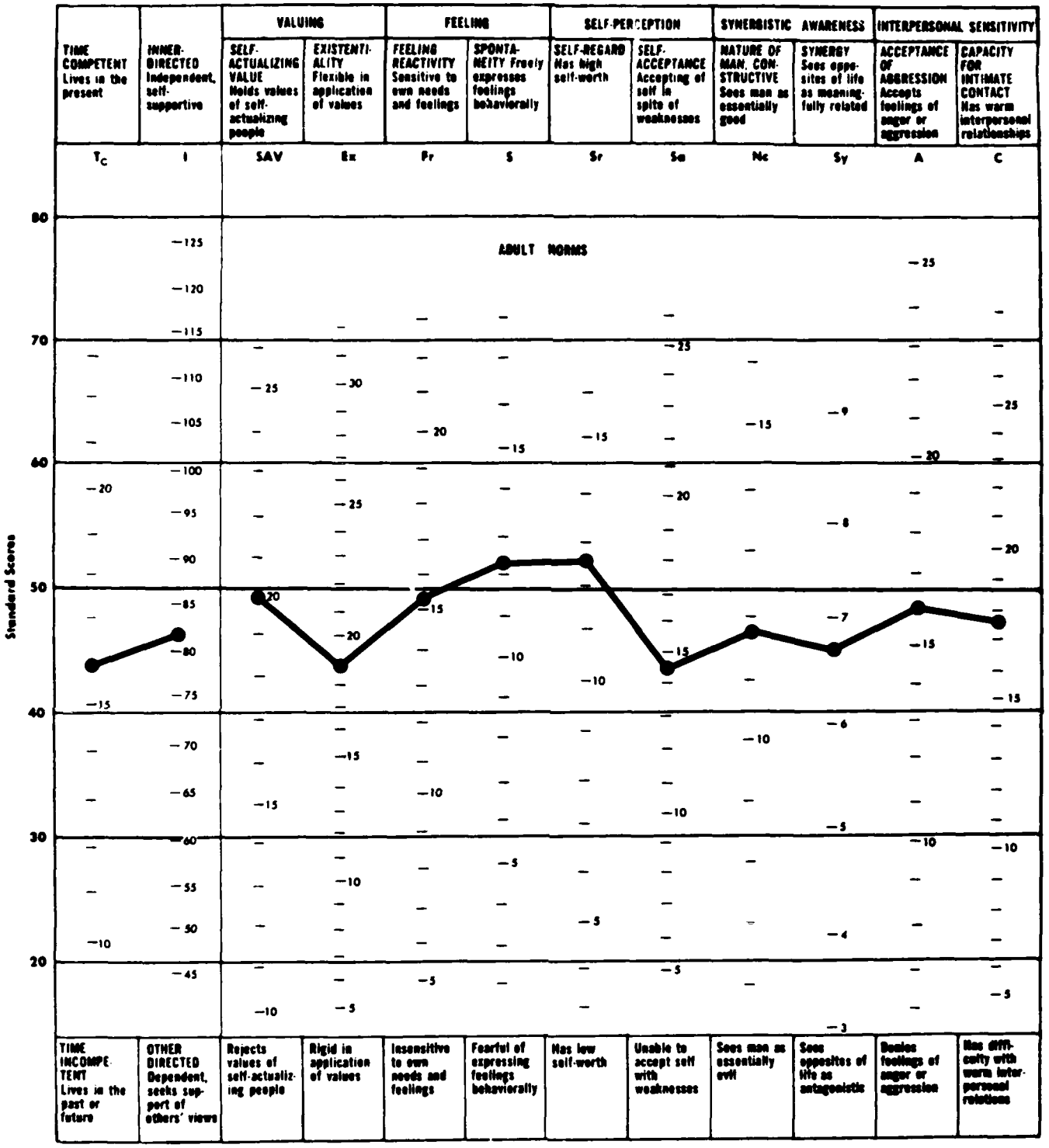

VALUING
FEELING
SELF-PERCEPTION
SYNERGISTIC AWARENESS
INTERPERSONAL SENSITIVITY
TIME COMPETENT Lives in the present
INNER-DIRECTED Independent, self-supportive
SELF-ACTUALIZING VALUE Holds values of self-actualizing people
EXISTENTIALITY Flexible in application of values
FEELING REACTIVITY Sensitive to own needs and feelings
SPONTANEITY Freely expresses feelings behaviorally
SELF-REGARD Has high self-worth
SELF-ACCEPTANCE Accepting of self in spite of weaknesses
NATURE OF MAN, CONSTRUCTIVE Sees man as essentially good
SYNERGY Sees opposites of life as meaningfully related
ACCEPTANCE OF AGGRESSION Accepts feelings of anger or aggression
CAPACITY FOR INTIMATE CONTACT Has warm interpersonal relationships
Tc
I
SAV
Ex
Fr
S
Sr
Sa
Nc
Sy
A
C
ADULT NORMS
Standard Scores
80
70
60
50
40
30
20
TIME INCOMPETENT Lives in the past or future
OTHER DIRECTED Dependent, seeks support of others' views
Rejects values of self-actualizing people
Rigid in application of values
Insensitive to own needs and feelings
Fearful of expressing feelings behaviorally
Has low self-worth
Unable to accept self with weaknesses
Sees man as essentially evil
Sees opposites of life as antagonistic
Denies feelings of anger or aggression
Has difficulty with warm interpersonal relations

FIGURE 3

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